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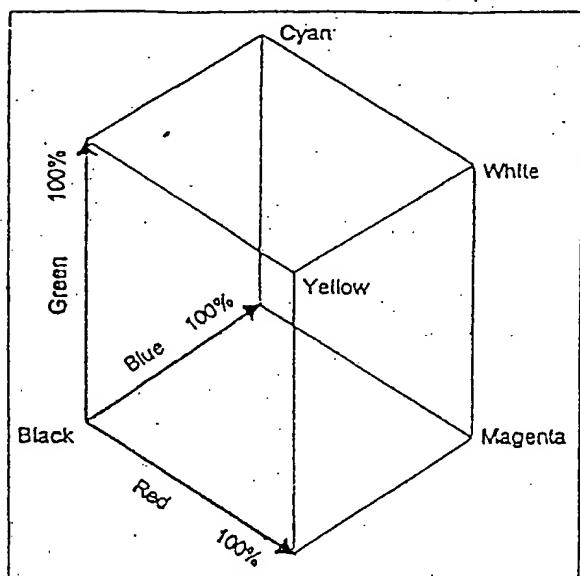


FIG. 1 PRIOR ART

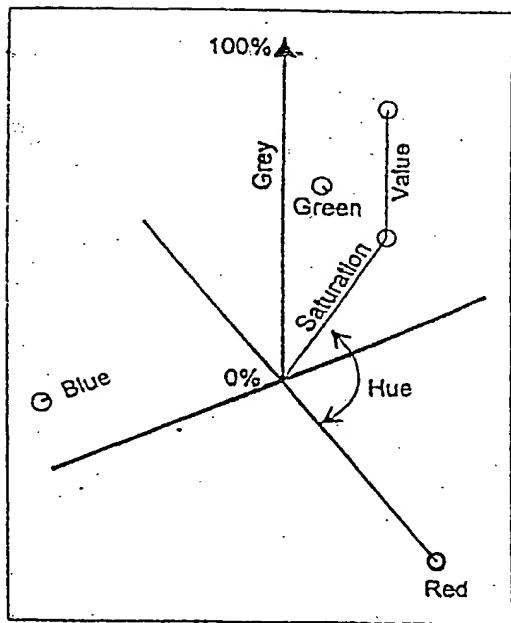


FIG. 2 PRIOR ART

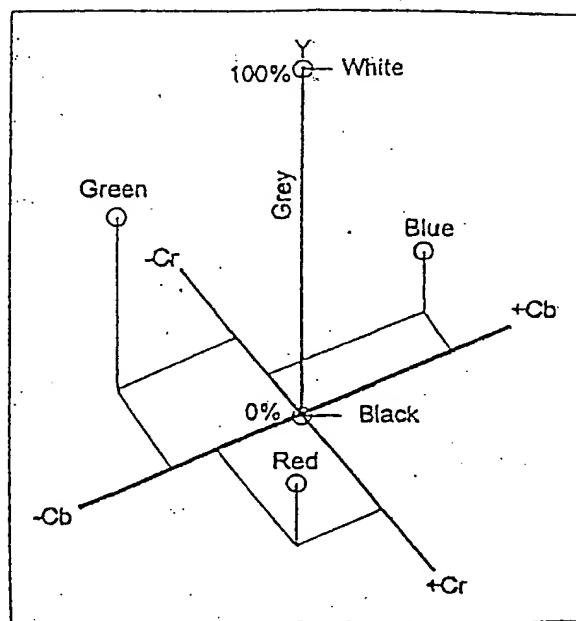


FIG. 3 PRIOR ART

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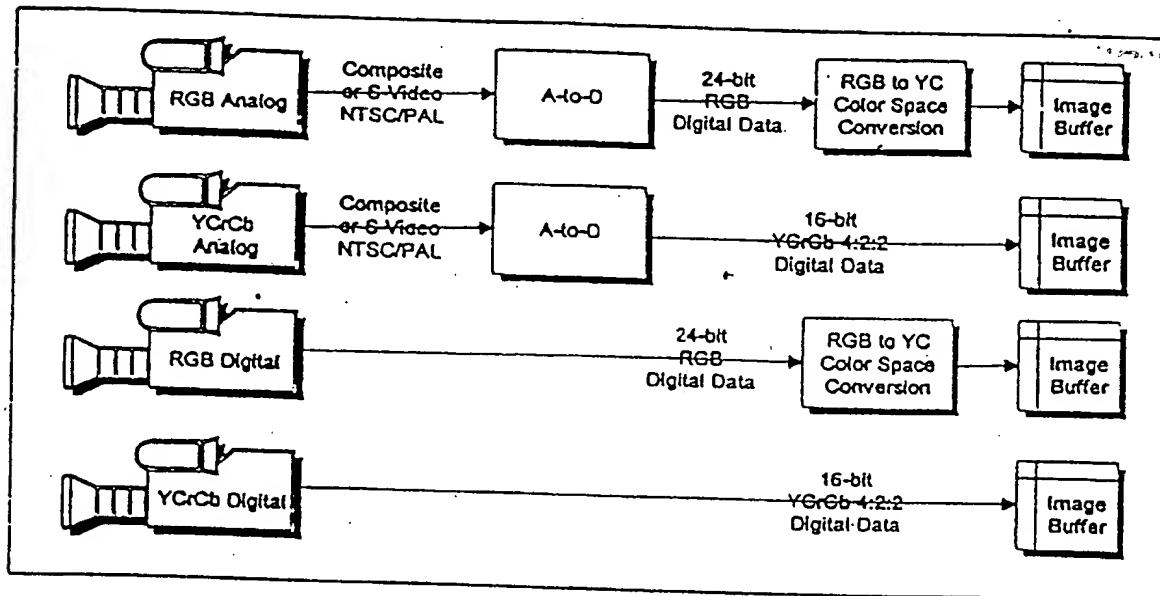


FIG. 4

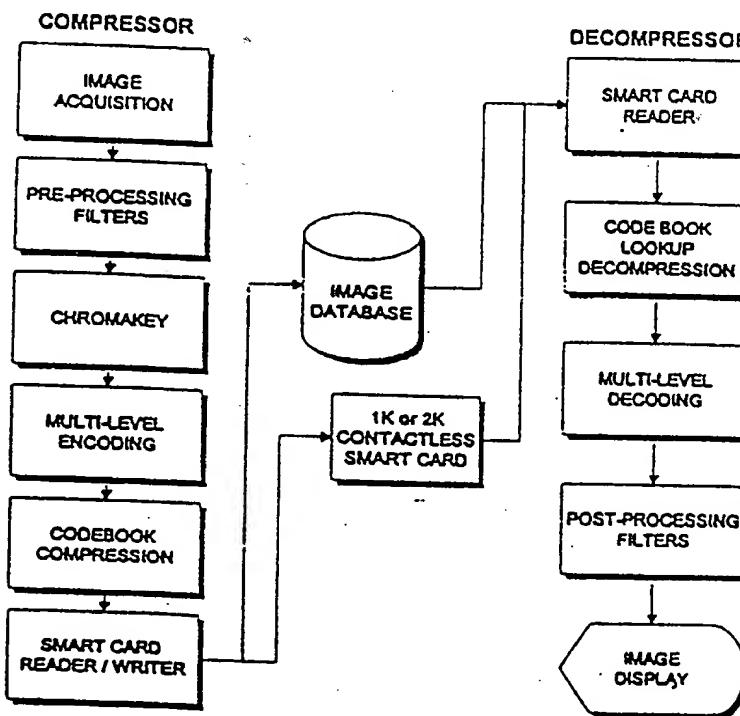


FIG. 5

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If all pixels are within a specified threshold, the output is the average of the four pixels, two on each side of the target.

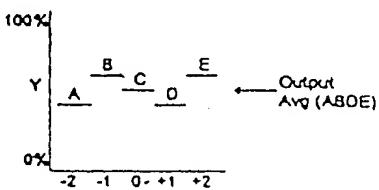


FIG. 6

If the two pixels on either side are within a specified threshold and both sides themselves are within the

threshold; the target pixel is considered to be impulse noise. The output is the average of the two pixels on each side of the target.

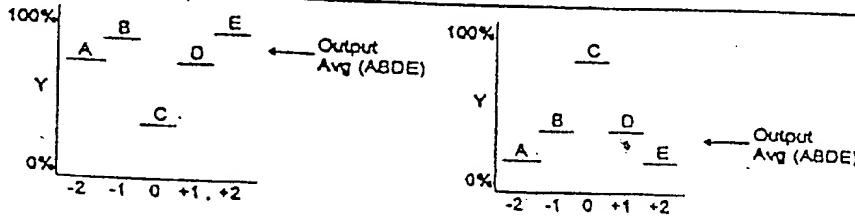


FIG. 7

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If the two pixels on either side of the target pixel and the target pixel itself are within a specified threshold, the target pixel is considered to be an edge pixel. The output is the average of the two pixels on the matching side.

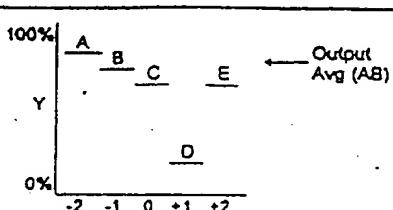
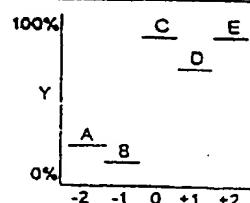
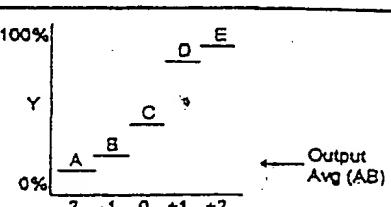
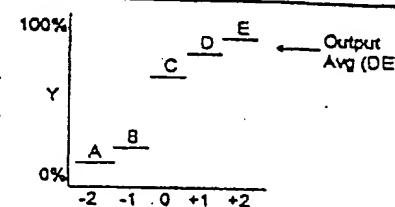


FIG. 8

If the five pixels are all increasing or decreasing (or are within a small threshold to account for ringing or pre-emphasis



typically found in analog video signals), the target is considered to be in the midst of a blurred edge. The output is the average of the two pixels on whichever side is closest to the target pixel.

FIG. 9

If the five pixels in the window do not fit into any of the prior cases, the target is considered to be in the midst of a busy area. The target pixel is output unchanged.

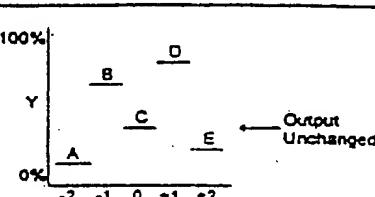


FIG. 10

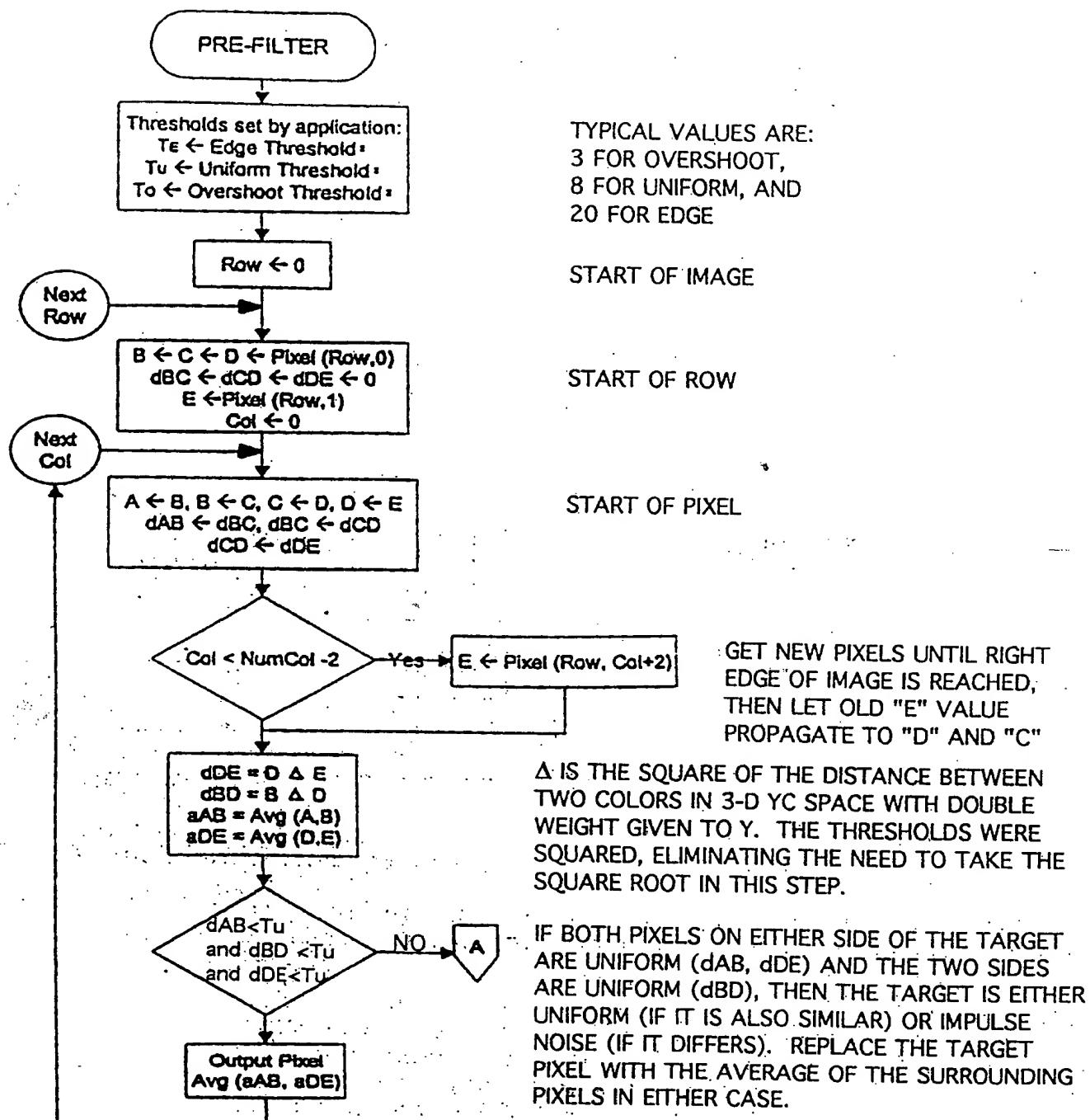


FIG. 11A

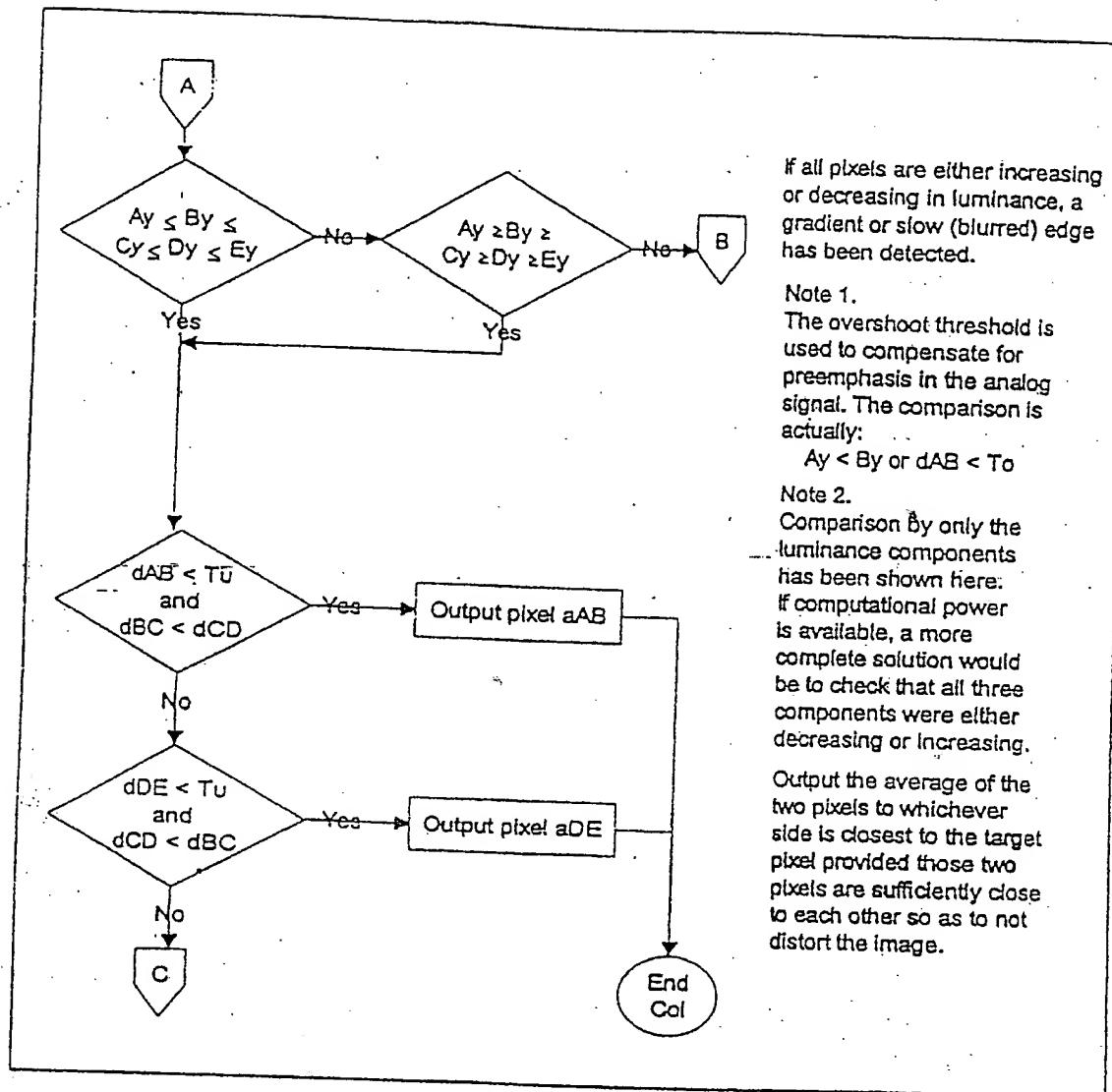


FIG. 11B

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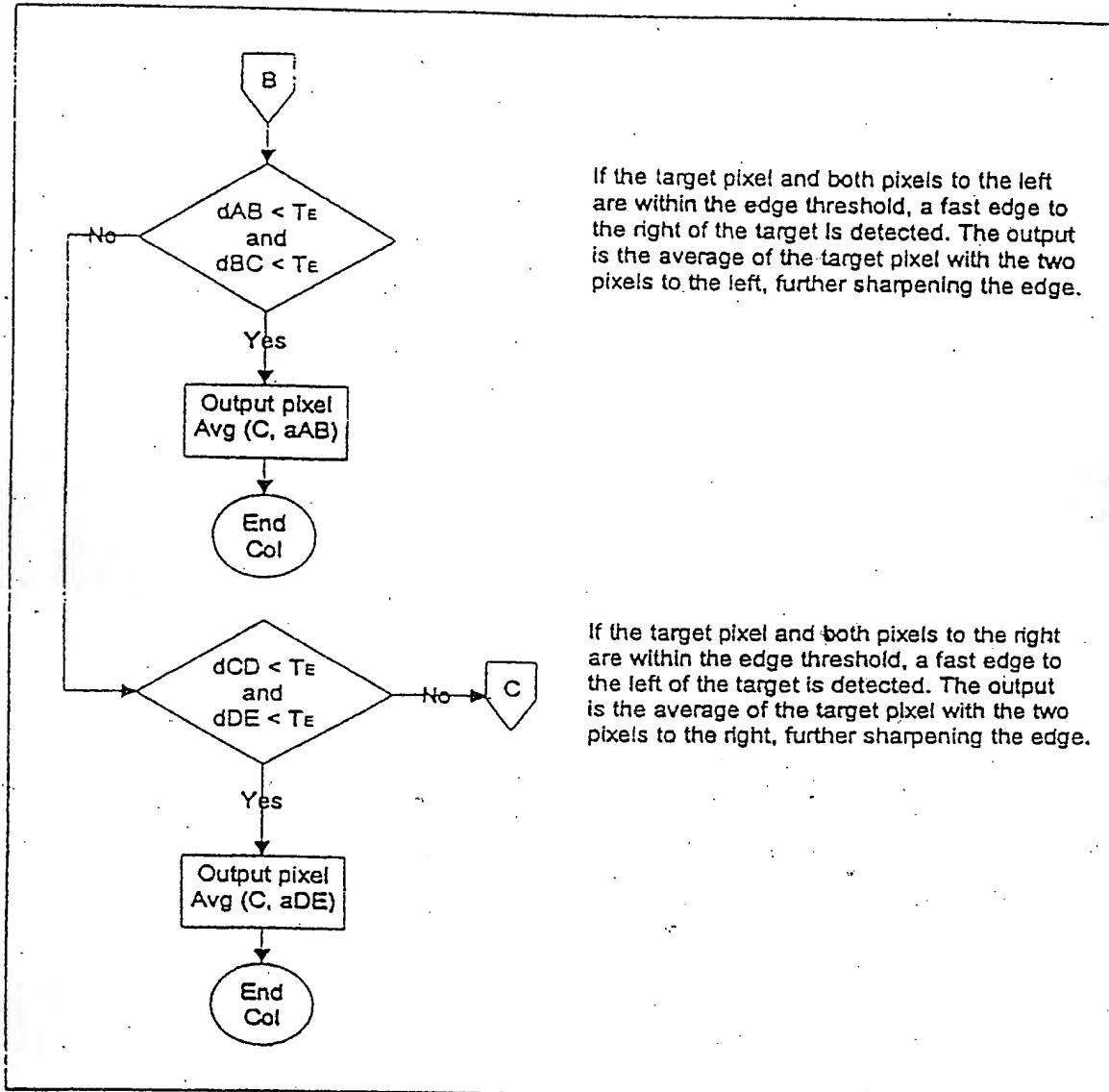
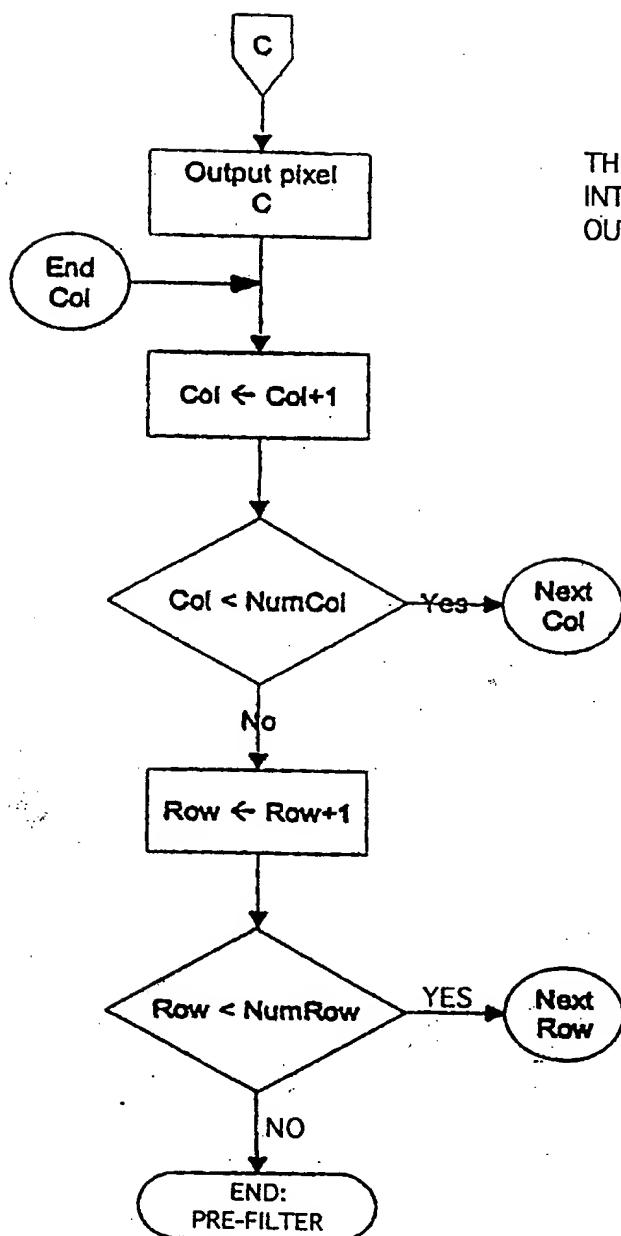


FIG. 11C



THE TARGET PIXEL HAS NOT FALLEN  
INTO ANY OF THE CASES, SO IT IS  
OUTPUT UNCHANGED.

FIG. 11D

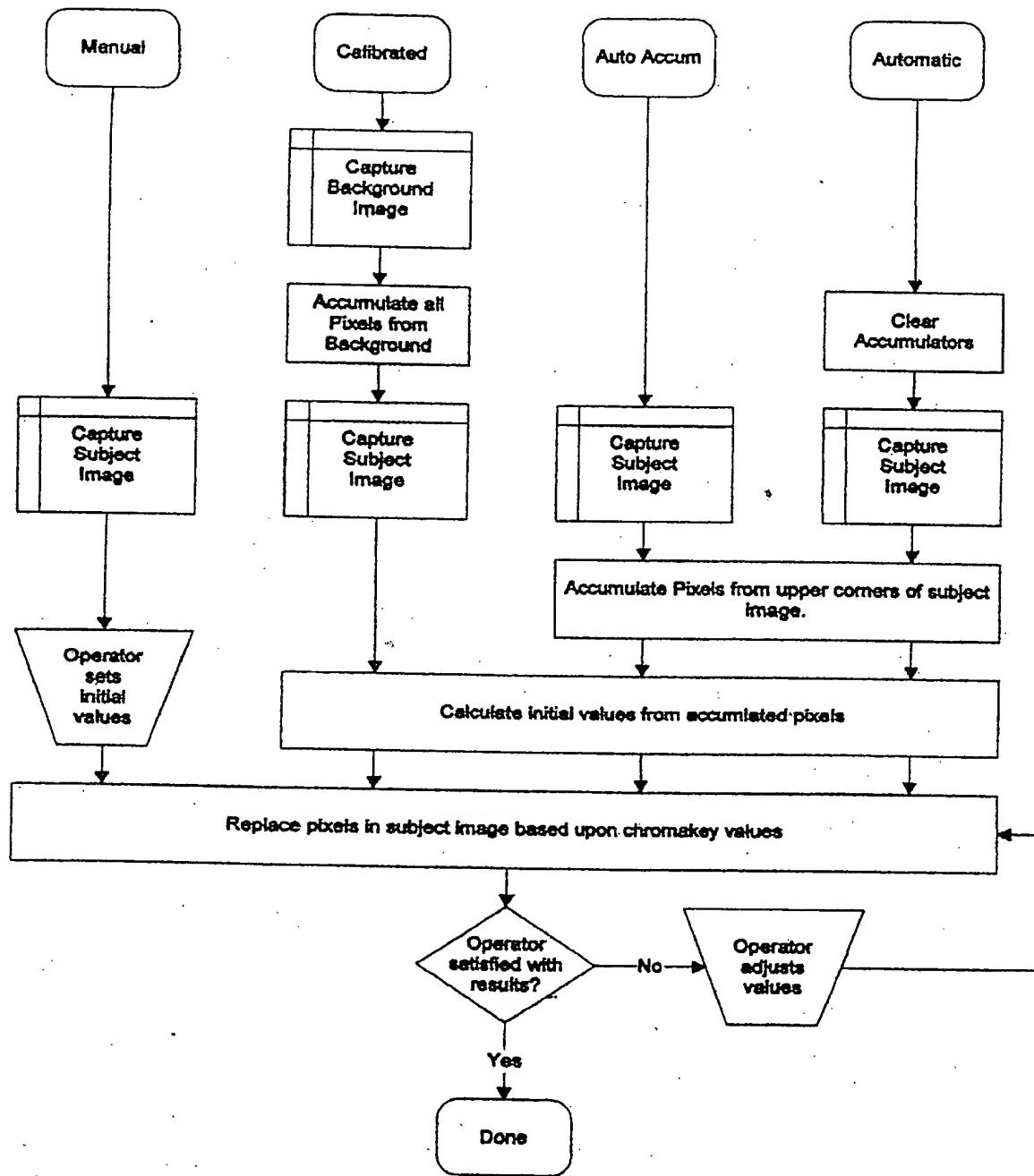
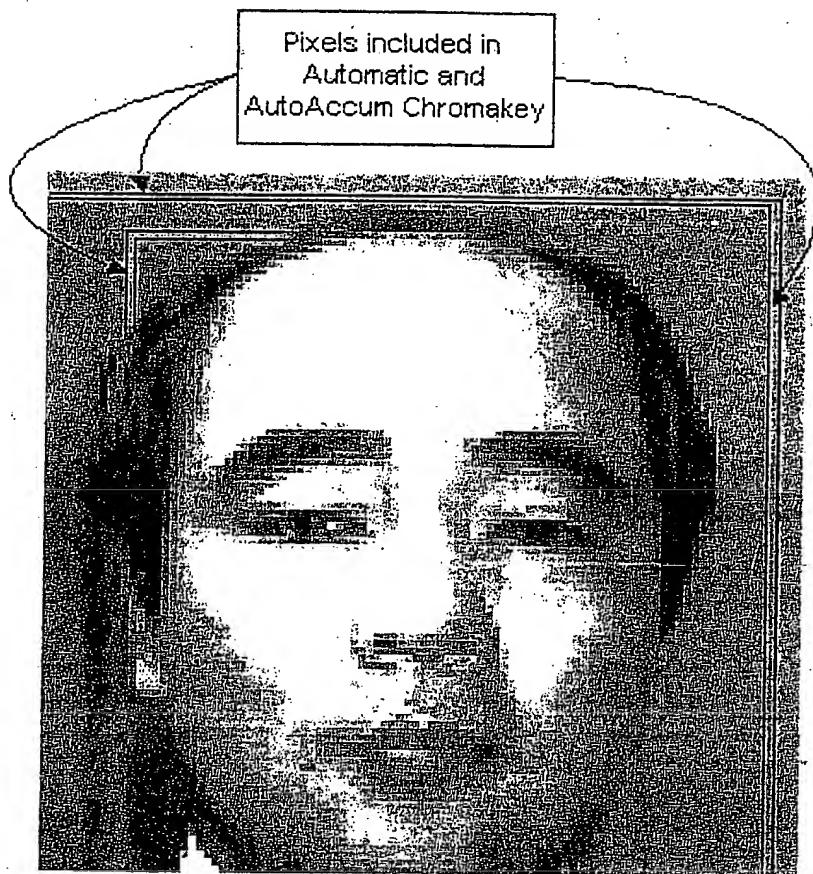


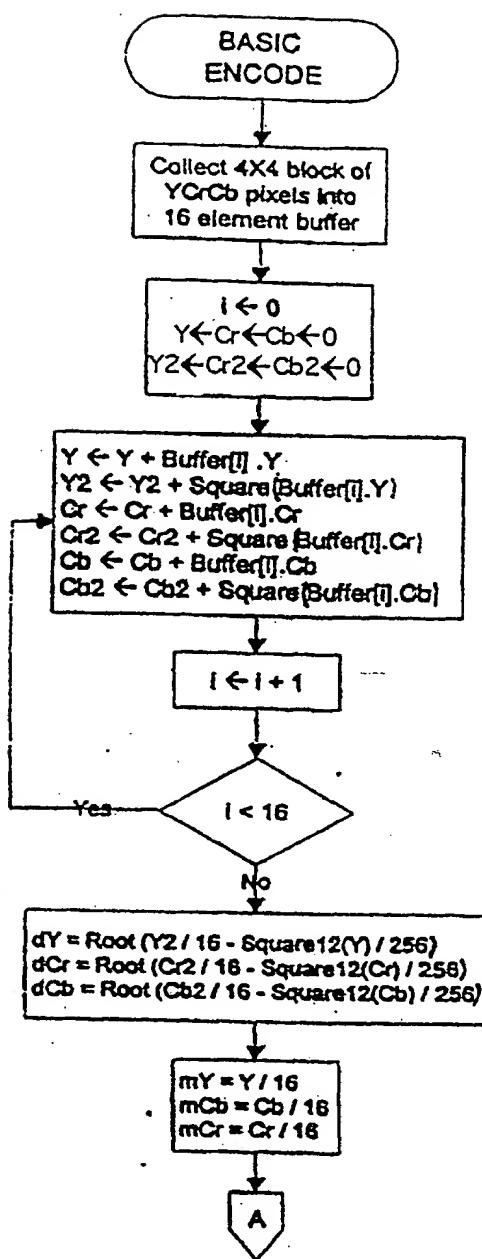
FIG. 11E

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*FIG. 11F*

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Buffer index will range from 0 to 15.  
Color components will be referred to as: ".Y", ".Cr", and ".Cb"

Step 1 - Collect first and second moments

Accumulate separate component values as squares for each pixel. Squares are calculated by table lookup rather than by multiplication.

Step 2 - Calculate mean and standard deviation  
The square12 function calculates the square of a 12-bit number using the same 8-bit table of squares above and little extra arithmetic. The root function finds roots by binary search of the 8-bit table of squares.

$dY$ ,  $dCr$ , and  $dCb$  are the standard deviations for each component and  $mY$ ,  $mCr$ , and  $mCb$  are the arithmetic means.

FIG. 12A

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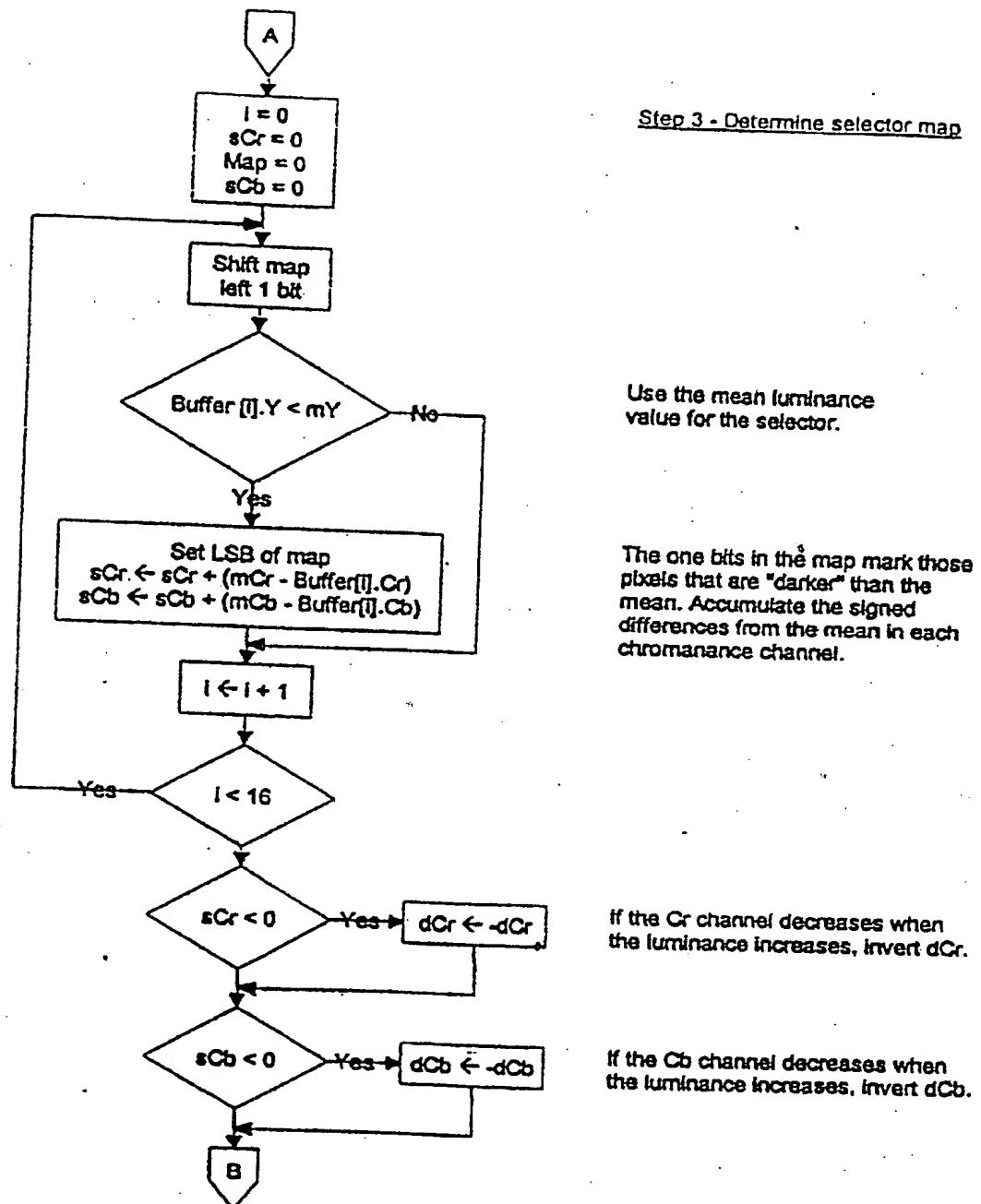


FIG. 12B

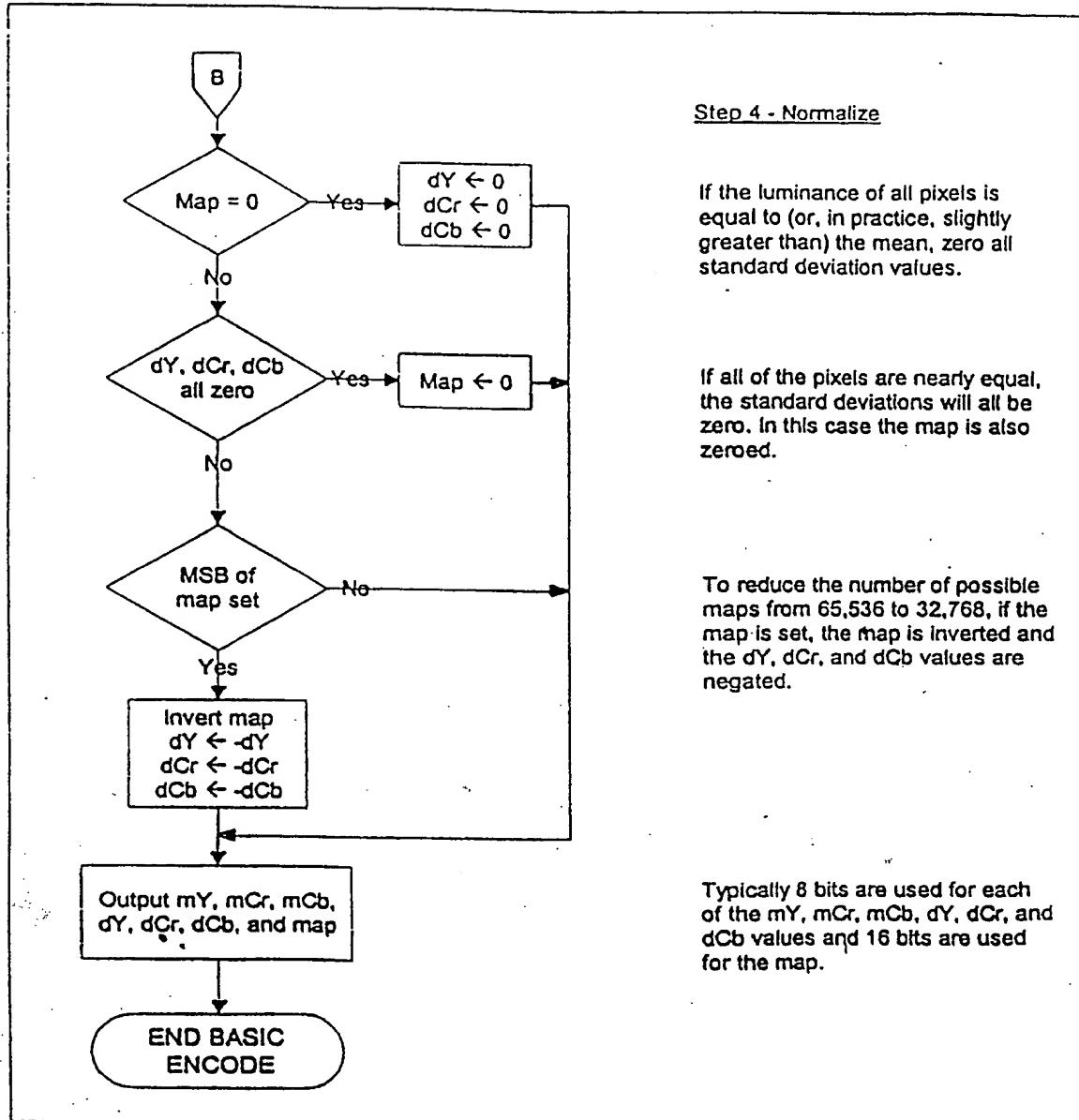


FIG. 12C

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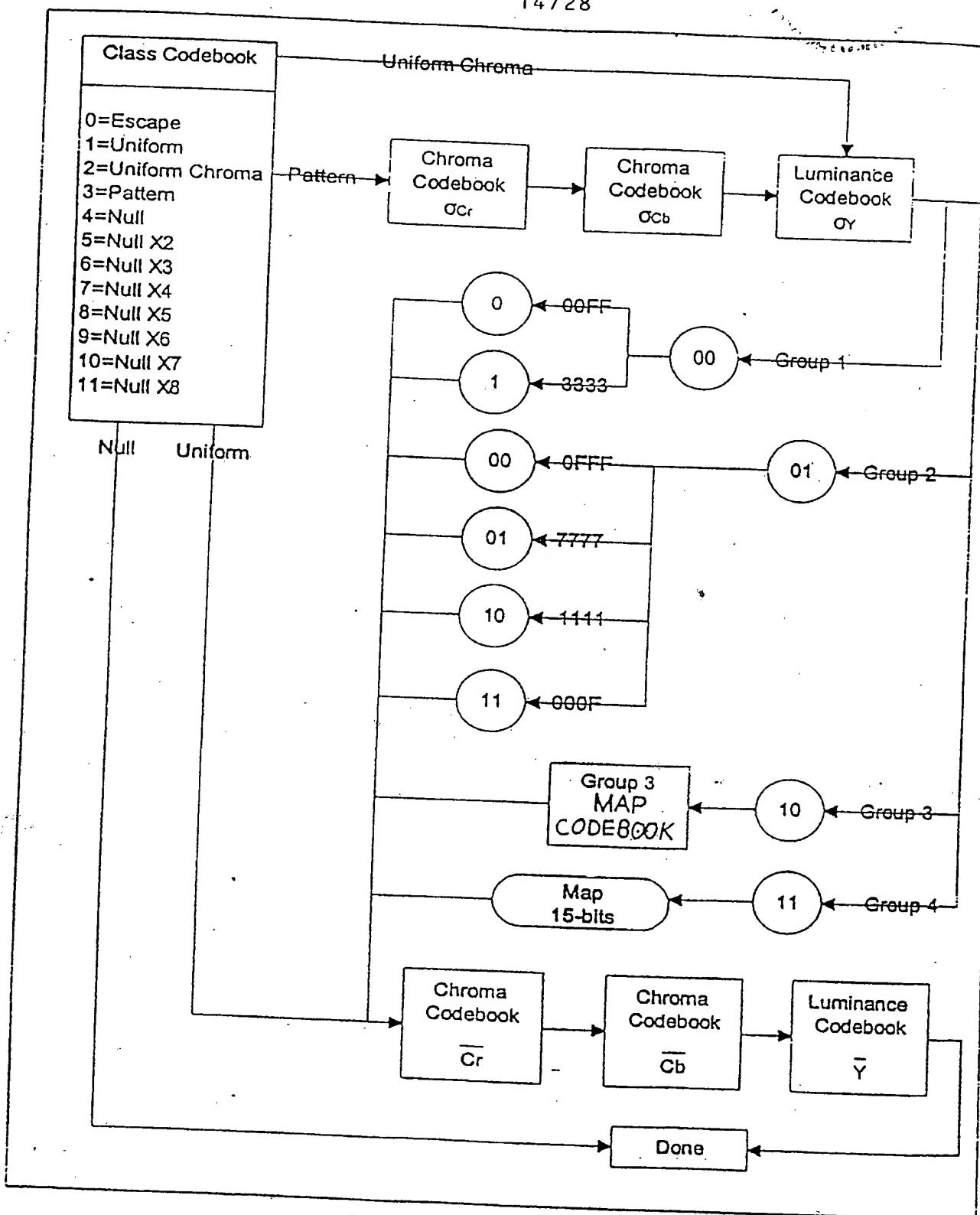


FIG. 13

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COMPRESS BLOCK

COLLECT DATA FOR THIS BLOCK:

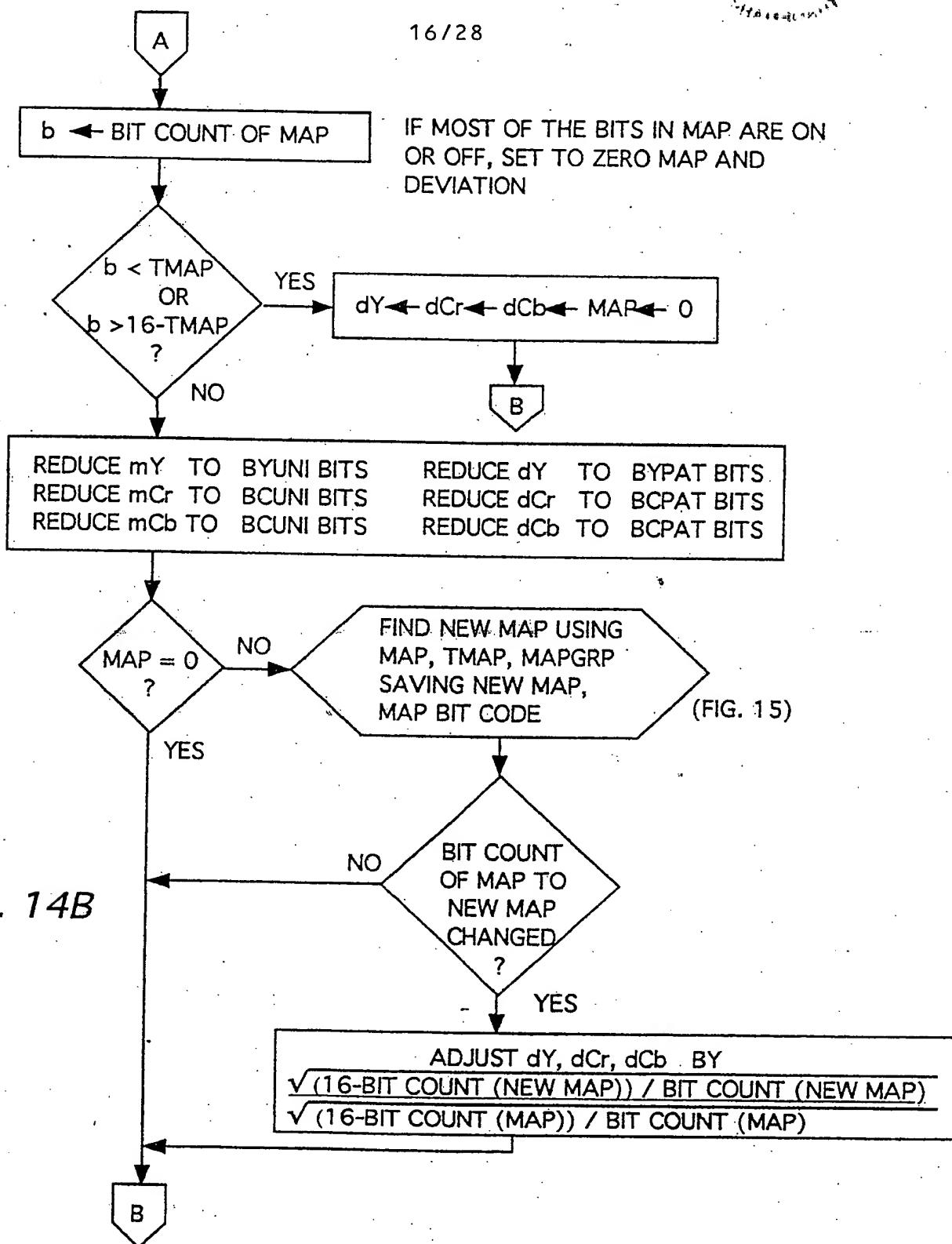
TYUNI ← UNIFORM LUMINANCE THRESHOLD  
TCUNI ← UNIFORM CHROMINANCE THRESHOLD  
TYNULL ← NULL LUMINANCE THRESHOLD  
TCNULL ← NULL CHROMINANCE THRESHOLD  
TMAP ← MAP ERROR THRESHOLD  
MAPGRP ← MAP GROUP PARAMETER  
BYPAT ← PATTERN LUMINANCE BITS  
BCPAT ← PATTERN CHROMINANCE BITS  
BYUNI ← UNIFORM LUMINANCE BITS  
BCUNI ← UNIFORM CHROMINANCE BITS  
mY ← BLOCK MEAN LUMINANCE  
mCr ← BLOCK MEAN Cr CHANNEL  
mCb ← BLOCK MEAN Cb CHANNEL  
dY ← BLOCK STD. DEV. LUMINANCE  
dCr ← BLOCK STD. DEV. Cr CHANNEL  
dCb ← BLOCK STD. DEV. Cb CHANNEL  
MAP ← BLOCK SELECTION MAP

INITIALIZE VALUES:

A

FIG. 14A

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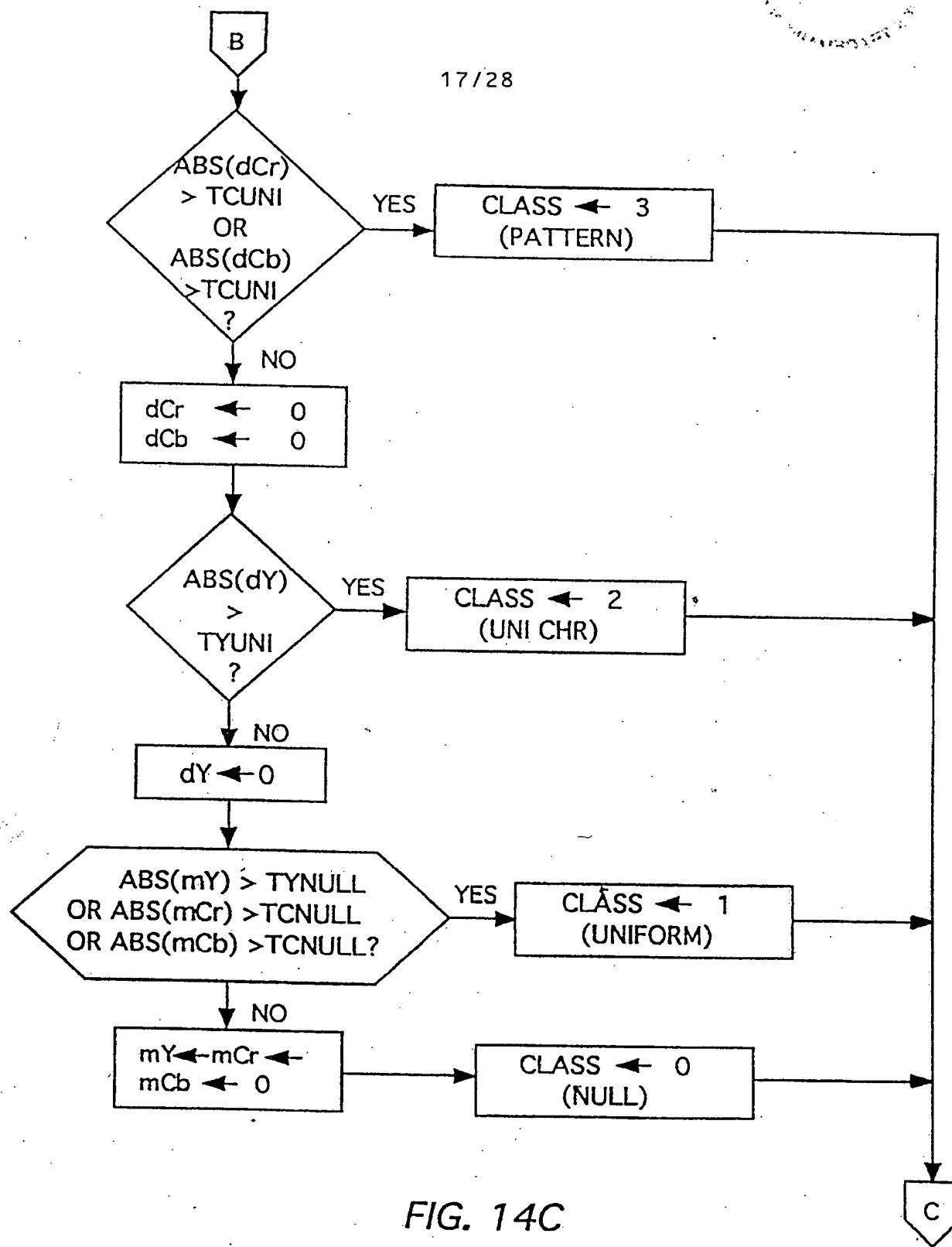


FIG. 14C

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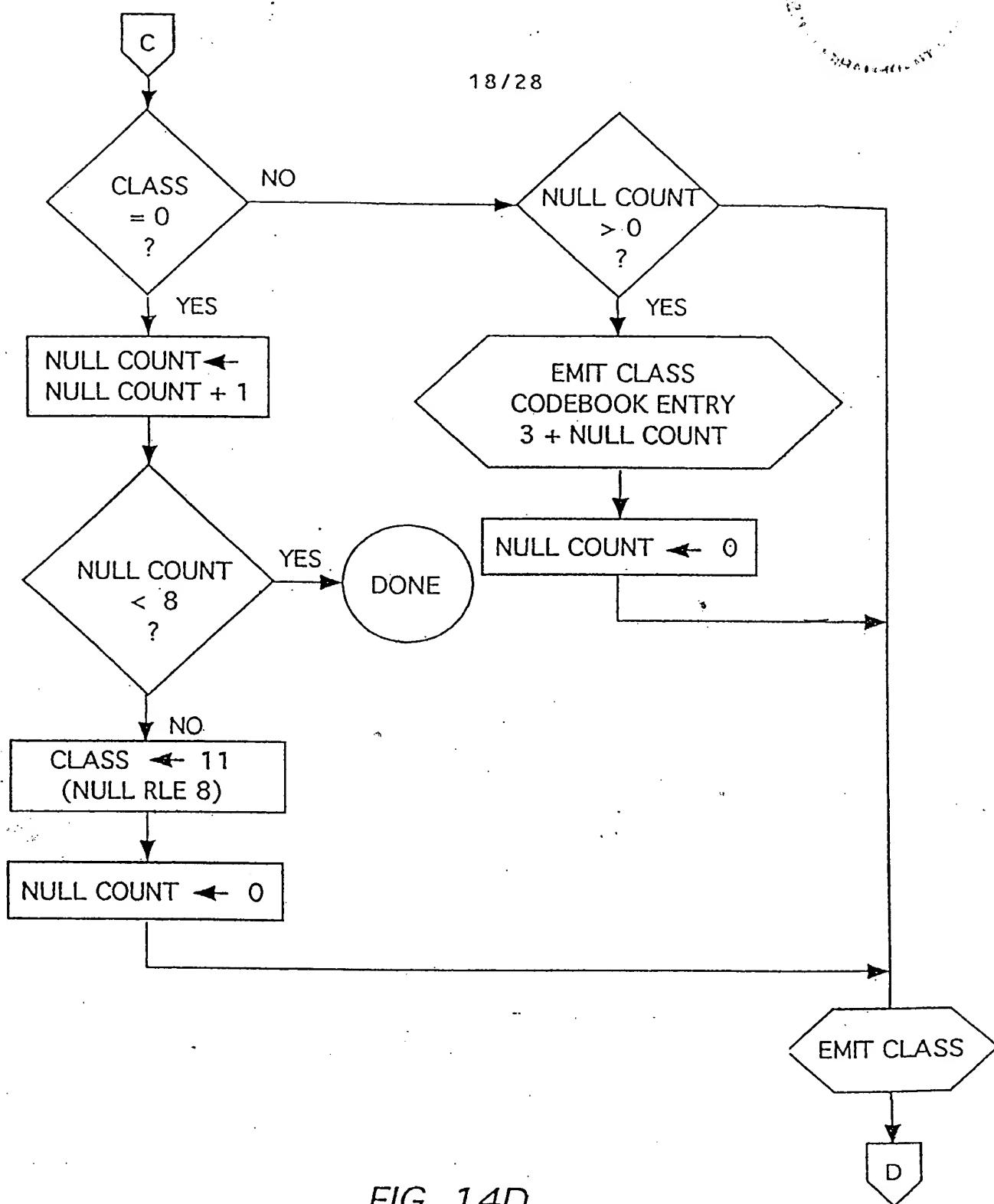


FIG. 14D

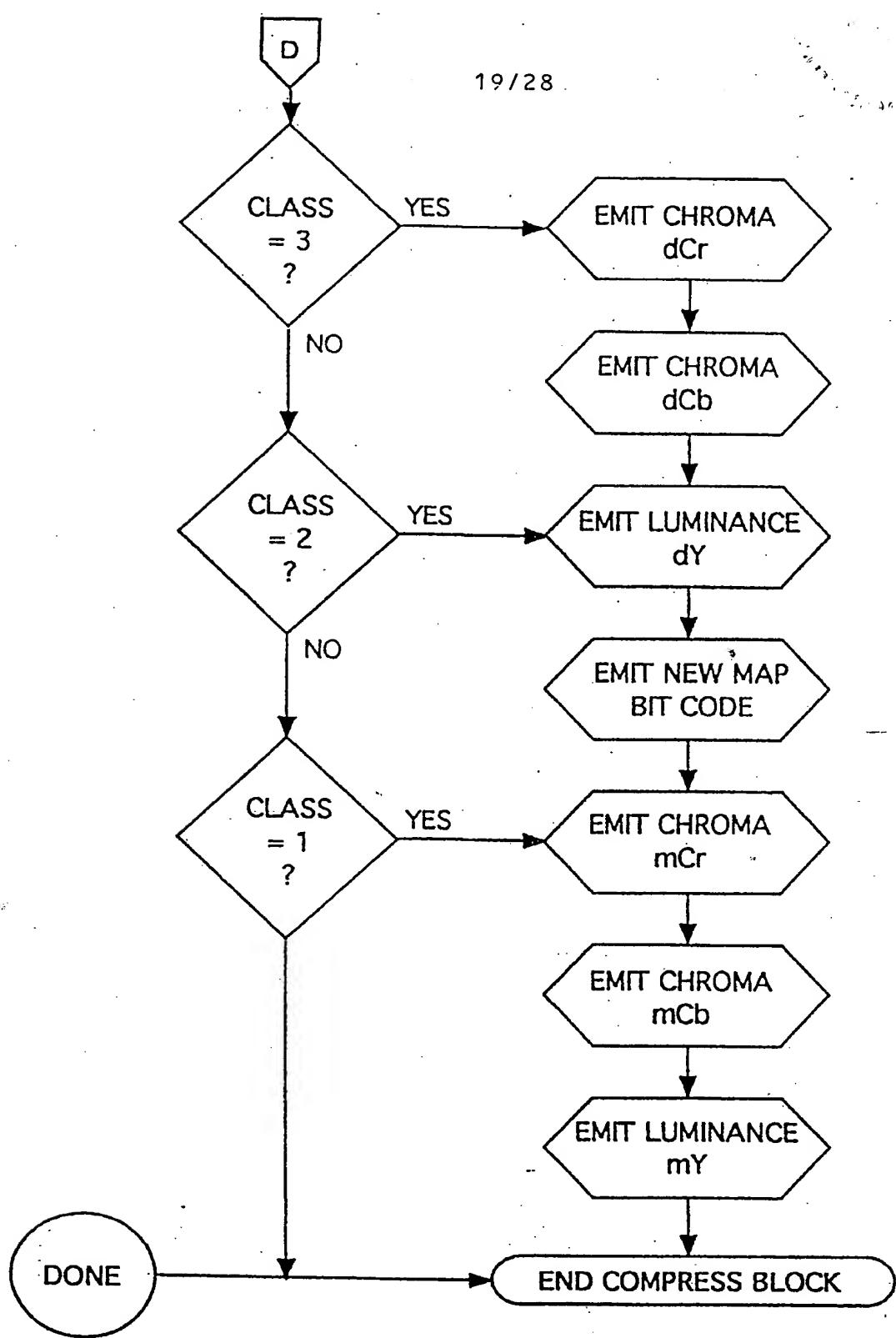


FIG. 14E

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FIG. 15C

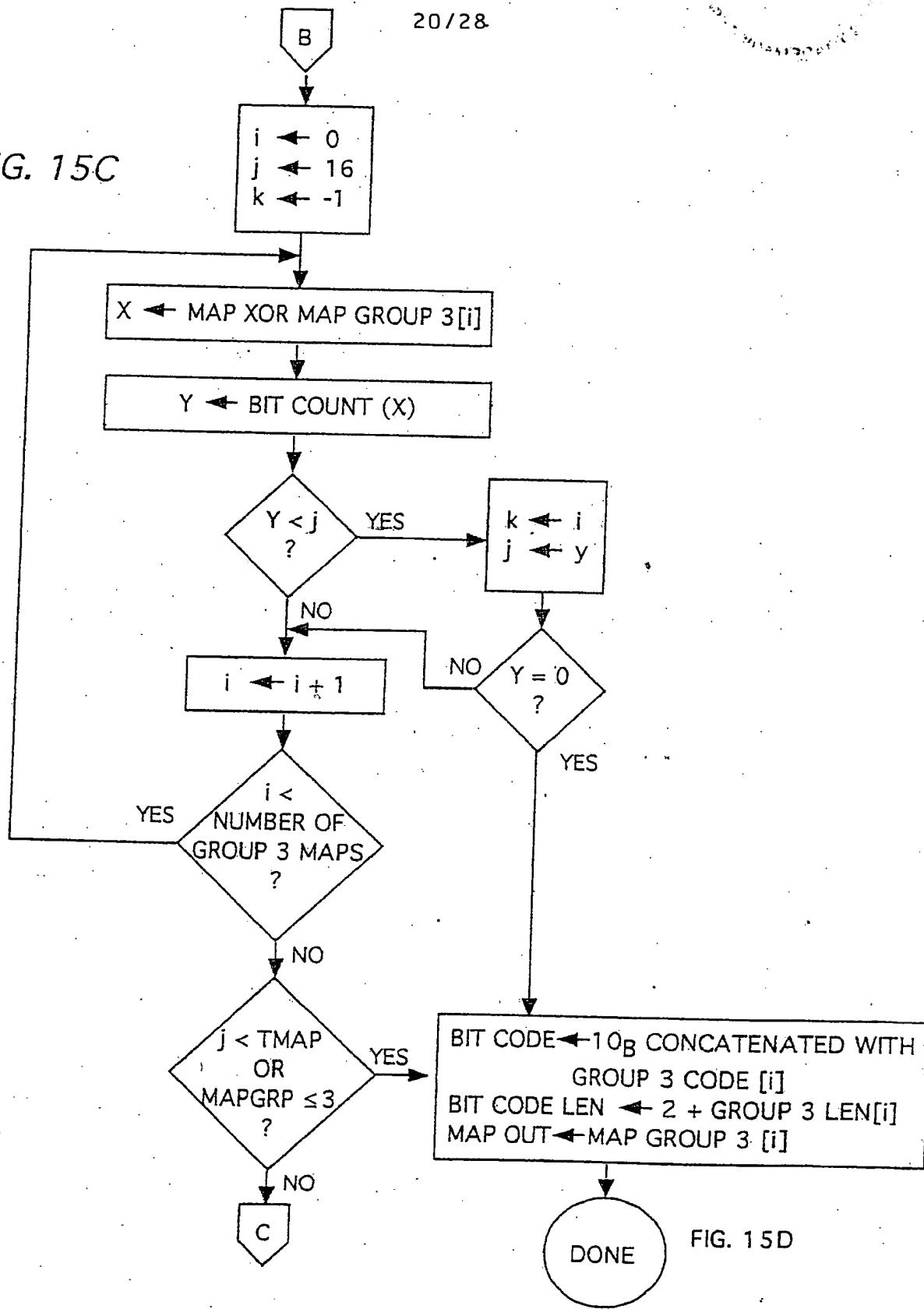


FIG. 15D

FIG. 15A

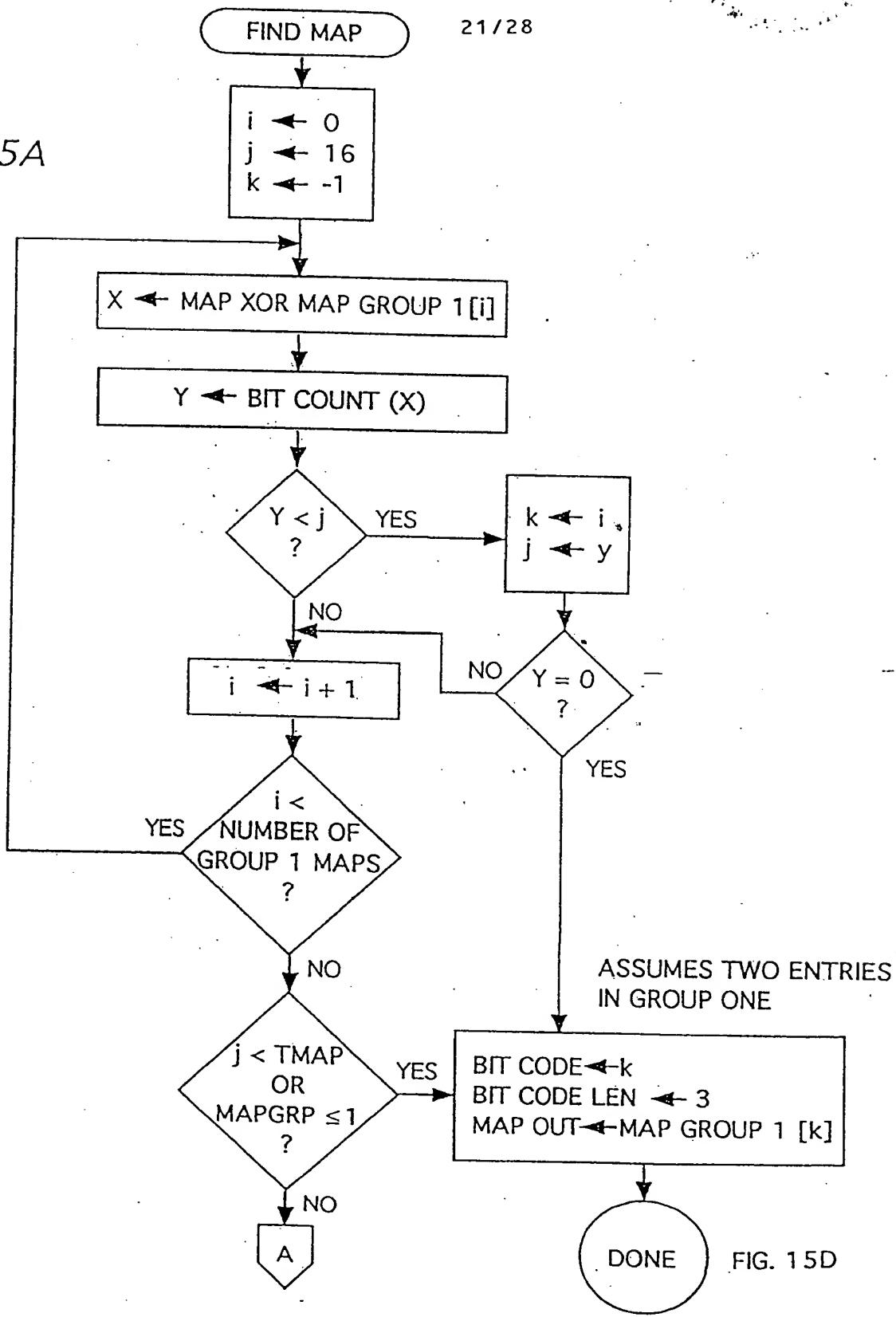
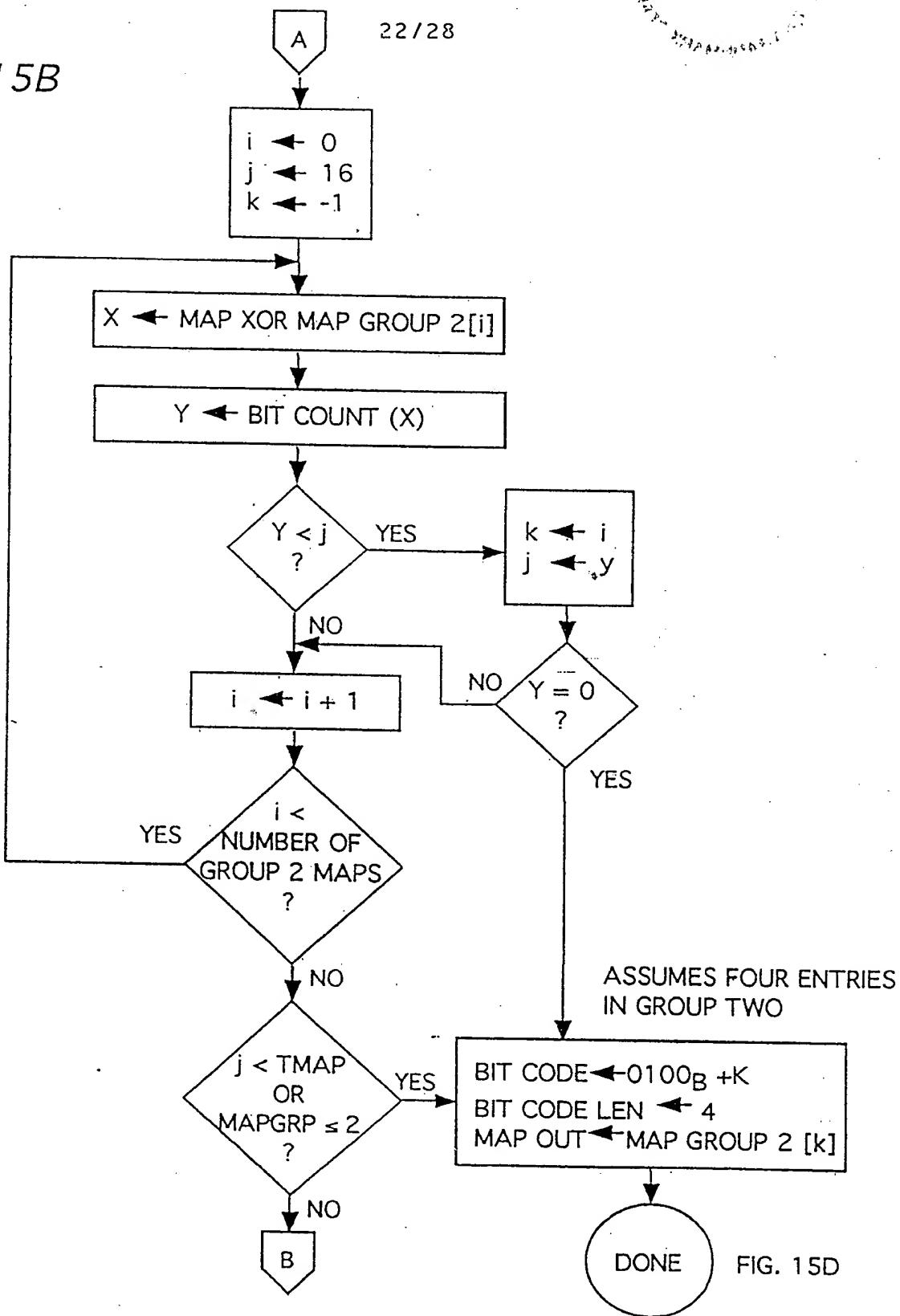


FIG. 15B



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FIG. 16A

D	D	D	D	D	D
D	C	B	B	C	D
D	B	A	A	B	D
D	B	A	A	B	D
D	C	B	B	C	D
D	D	D	D	D	D

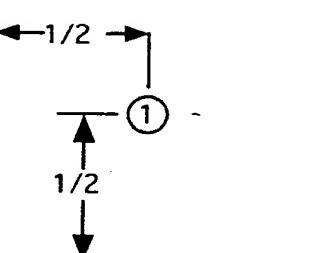
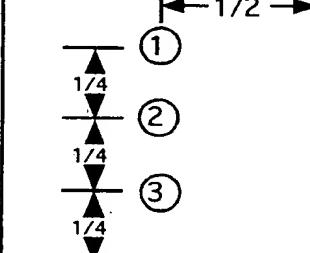
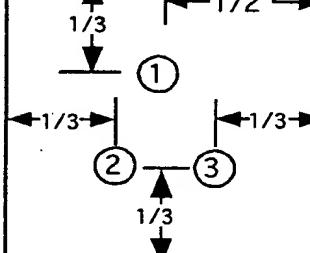
	CIRCLE	OVAL	BELL
NON-TRUNCATED	60 52 44 32 33 45 53 61 54 34 24 16 17 25 35 55 46 26 12 4 5 13 27 47 36 18 6 0 1 7 19 37 38 20 8 2 3 9 21 39 48 28 14 0 11 15 29 49 56 40 30 22 23 31 41 57 62 58 50 12 43 51 59 63	60 52 40 32 33 41 53 61 56 36 24 16 17 25 37 57 48 28 12 4 5 13 29 49 42 20 8 0 1 9 21 43 44 22 10 2 3 11 23 45 50 30 14 6 7 5 31 51 58 38 26 8 19 27 39 59 62 54 46 34 35 47 55 63	62 58 54 44 45 55 59 63 56 46 34 26 27 35 47 57 50 30 6 10 11 17 31 51 40 24 12 4 5 13 25 41 38 8 6 0 1 7 19 39 42 22 3 2 3 9 23 43 52 32 20 14 15 21 33 53 60 48 36 28 29 37 49 61
TRUNCATED	X X 44 32 33 45 X X X 34 24 16 17 25 35 X 46 26 12 4 5 3 7 47 36 18 6 0 1 7 9 37 38 20 8 2 3 9 21 39 48 28 14 0 11 15 29 49 X 40 30 22 23 31 41 X X X 50 12 43 51 X X	X X 40 32 33 41 X X X 36 24 6 17 25 37 X 48 28 2 4 5 3 29 49 42 20 8 0 1 9 21 43 44 22 10 2 3 1 23 45 50 30 4 6 7 5 31 51 X 38 26 18 19 27 39 X X X 46 34 35 47 X X	X X 50 44 45 51 X X X 46 34 26 27 35 47 X 48 30 6 10 11 17 31 49 40 24 2 4 5 3 25 41 38 8 6 0 1 7 19 39 42 22 3 2 3 9 23 43 X 32 20 14 15 21 33 X X X 36 28 29 37 X X
CONTROL POINTS			

FIG. 16B

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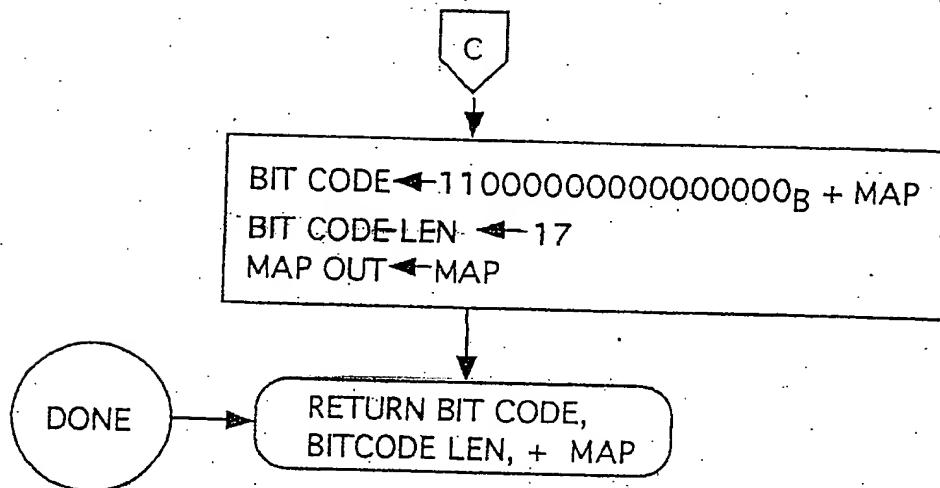


FIG. 15D

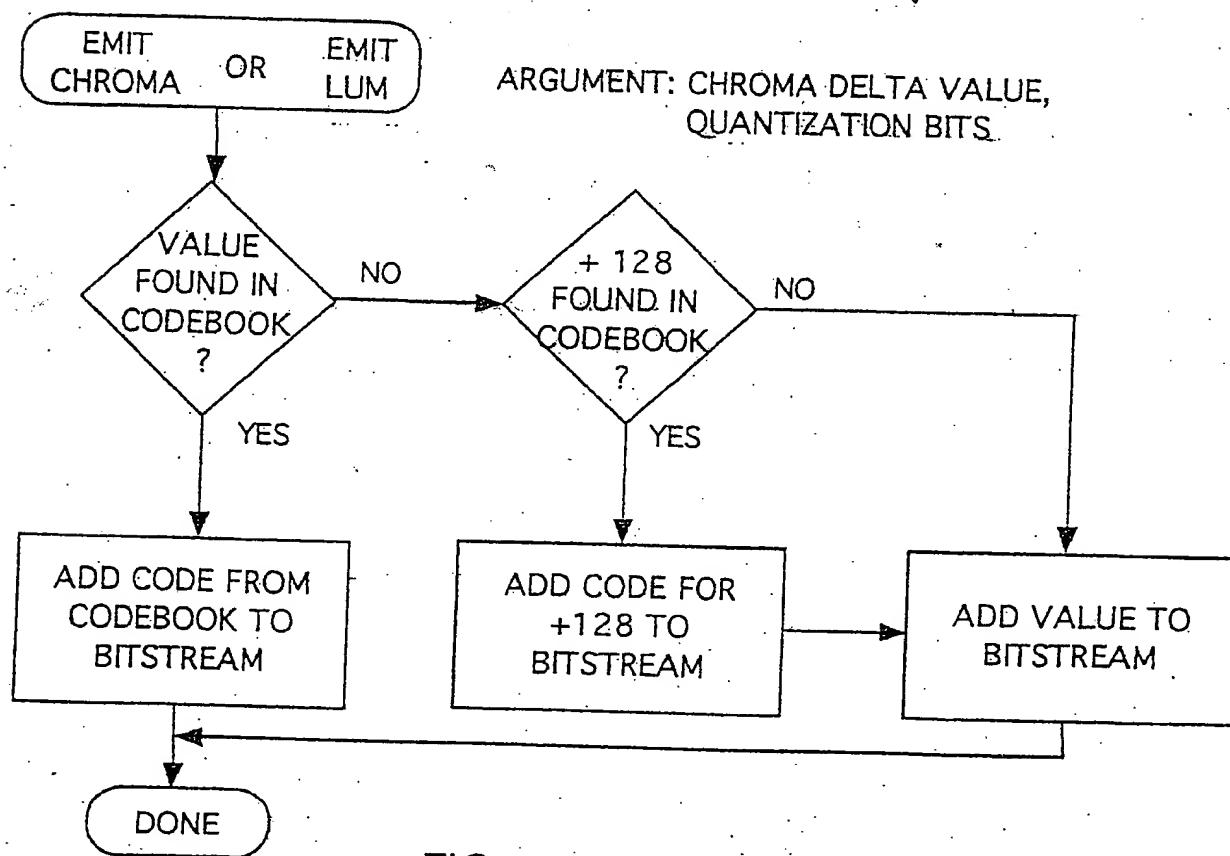


FIG. 17

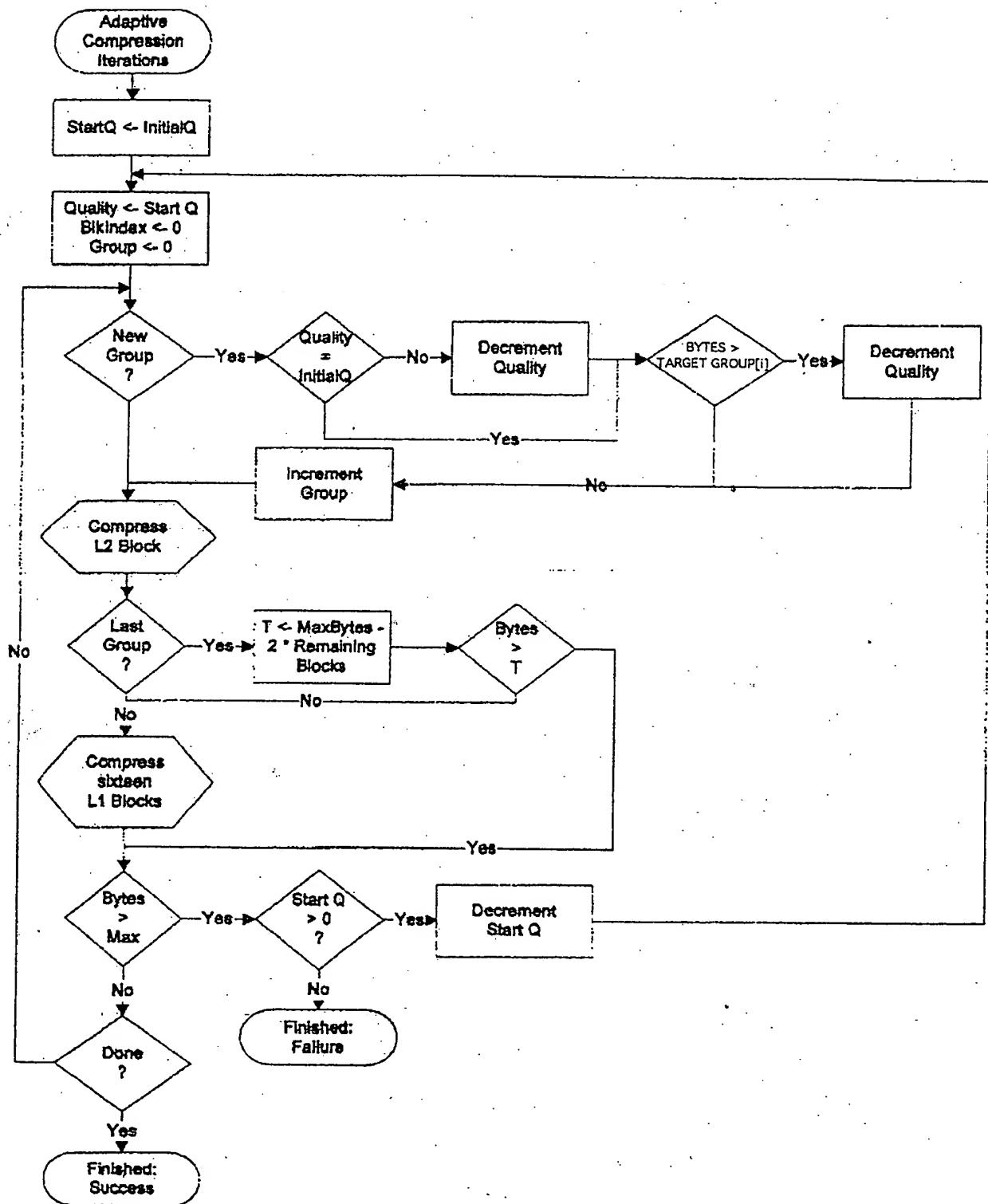


FIG. 18

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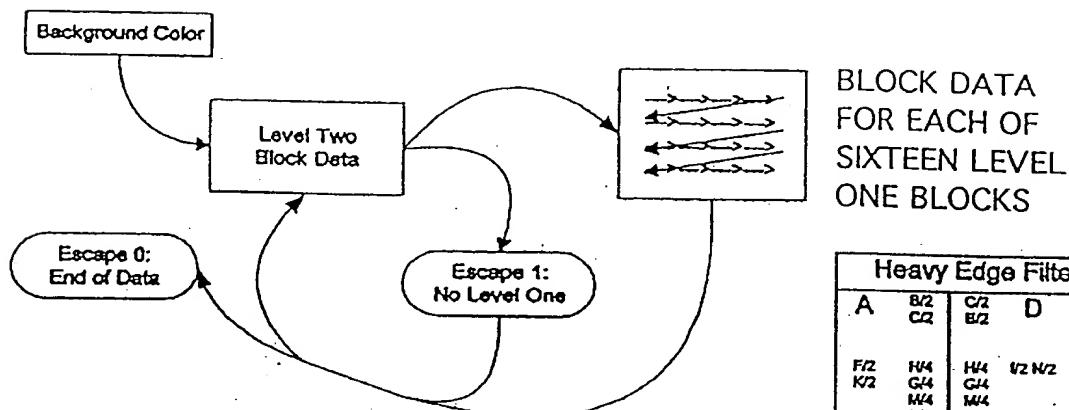


FIG. 19

Heavy Edge Filter				
A	B/2 C/2	C/2 B/2	D	E
F/2 K/2	H/4 G/4 K/4 L/4	H/4 G/4 M/4 L/4	H/2 N/2 G/2 M/2 L/2	J/2 U/2
K/2 F/2	H/4 G/4 M/4 L/4	H/4 G/4 M/4 L/4	H/2 I/2 G/2 M/2 L/2	O/2 J/2
P	O/2 R/2	R/2 Q/2	S	T
U	V/2 W/2	W/2 V/2	X	Y

Input				
A	B	C	D	E
F	G	H	I	J
K	L	M	N	O
P	Q	R	S	T
U	V	W	X	Y

Light Edge Filter				
A	B/4 C/4	C/4 B/4	D	E
3F/4 K/4	9G/16 3H/16 3I/16 3J/16 M/16	6H/16 3G/16 H/4 O/4	3I/4	3J/4
3K/4 G/4	9L/16 3M/16 3Q/16 H/16	6M/16 3L/16 G/16	3N/4 L/4	3O/4 J/4
P	3R/4 R/4	Q/4	S	T
U	3V/4 W/4	W/4	X	Y

Medium Edge Filter				
A	B/3 C/3	C/3 B/3	D	E
2F/3 K/3	4G/9 2H/9 2I/9 2L/9 M/9	4H/9 2G/9 2J/9 2M/9 L/9	2/3	2J/3
2K/3 F/3	4L/9 2M/9 2G/9 H/9	4M/9 2L/9 2H/9 G/9	2N/3 V/3	2O/3 J/3
P	2Q/3 R/3	Q/3	S	T
U	2V/3 W/3	W/3	X	Y

FIG. 20D

FIG. 20A

FIG. 20B

FIG. 20C

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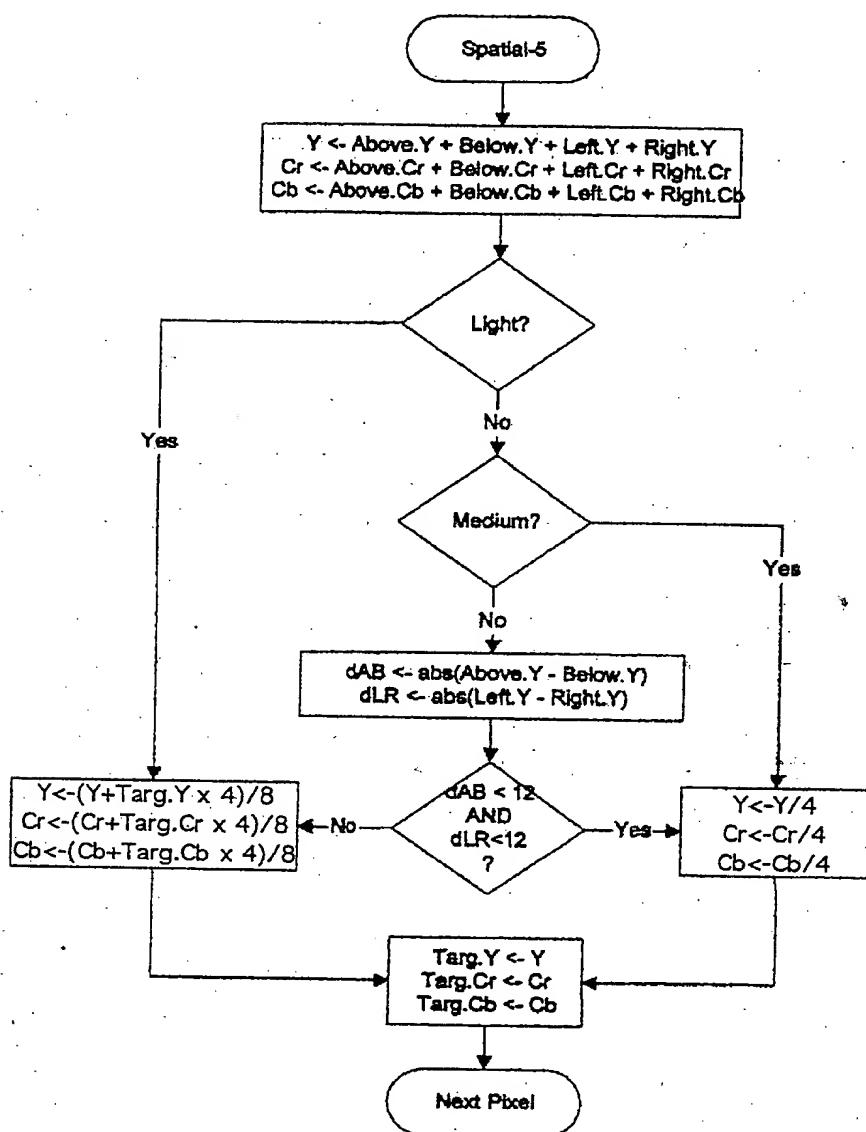


FIG. 21

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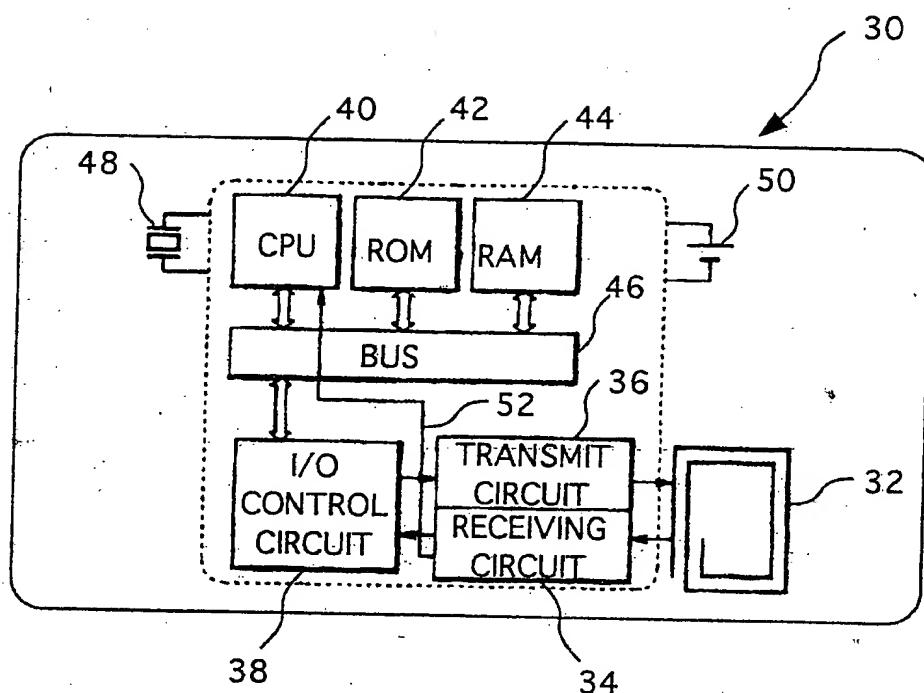


FIG. 22